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Information in Stock Prices: Buy the Rumor, Sell the News?

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Information in Stock Prices: Buy the Rumor, Sell the News?

Abstract

The popular adage, “buy the rumor and sell the news,” can apply to only half of stock trades, because someone must be on the other side of every trade, a party who is “buying the news.” The “news” in this study comes from changes in analyst recommendations, which cause measurable changes in stock prices. On average, analyst upgrades are accompanied by one-day abnormal returns of 1.96 percent, while analyst downgrades lead to one-day abnormal returns of -1.83 percent. Examining the trading patterns of four types of traders, the study finds that active institutional traders are best at buying a stock in the few days before an analyst upgrade (i.e., buying the rumor) and selling it on the upgrade day (selling the news). To a lesser extent, active institutional traders also sell before downgrades, while buying back on downgrade days. In contrast, program institutional traders are typically on the losing side of these trades, while market makers are generally not involved and individuals make only small investment changes. Based on 15,101 analyst upgrades and 15,907 analyst downgrades for 2,122 different NYSE-listed stocks, the study concludes that active managers can add value by trading on research (their own or that provided by sell-side analysts), which suggests that including some actively managed funds can make sense for retirement plans at hospitality firms. Looking specifically at changes in analyst recommendations for publicly traded hospitality firms, the same patterns hold, with average one-day abnormal returns of 1.98 percent on analyst upgrades and -1.79 percent on analyst downgrades and similar “buy the rumor, sell the news” trading patterns by active institutional investors around analyst recommendation changes.

Keywords

stock prices, financial markets, stock trading, trading patterns, active institutional investors, program institutional investors, market makers, stock analysis

Disciplines

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Information in Stock Prices:

Buy the Rumor, Sell the News?

by Pamela C. Moulton

ABOUT THE AUTHOR

Pamela C. Moulton, Ph.D., is an associate professor of finance at Cornell University's School of Hotel Administration. Her teaching and research interests include financial markets and market microstructure, with a special interest in the role of investors. Her current research focuses on institutional trade holding periods, the impact of institutional investment and high-frequency trading on stock performance, and how investors trade on sell-side analyst recommendations. Moulton's research has been published in leading finance and accounting journals, including the *Journal of Finance*, the *Journal of Financial Economics*, the *Journal of Accounting and Economics*, and the *Journal of Financial and Quantitative Analysis*.



This report is adapted from a larger study conducted by Ohad Kadan, Roni Michaely, and Pamela C. Moulton, "Trading in the Presence of Short-Lived Private Information: Evidence from Analyst Recommendation Changes," forthcoming in the *Journal of Financial and Quantitative Analysis*.

EXECUTIVE SUMMARY

The popular adage, “buy the rumor and sell the news,” can apply to only half of stock trades, because someone must be on the other side of every trade, a party who is “buying the news.” The “news” in this study comes from changes in analyst recommendations, which cause measurable changes in stock prices. On average, analyst upgrades are accompanied by one-day abnormal returns of 1.96 percent, while analyst downgrades lead to one-day abnormal returns of -1.83 percent. Examining the trading patterns of four types of traders, the study finds that active institutional traders are best at buying a stock in the few days before an analyst upgrade (i.e., buying the rumor) and selling it on the upgrade day (selling the news). To a lesser extent, active institutional traders also sell before downgrades, while buying back on downgrade days. In contrast, program institutional traders are typically on the losing side of these trades, while market makers are generally not involved and individuals make only small investment changes. Based on 15,101 analyst upgrades and 15,907 analyst downgrades for 2,122 different NYSE-listed stocks, the study concludes that active managers can add value by trading on research (their own or that provided by sell-side analysts), which suggests that including some actively managed funds can make sense for retirement plans at hospitality firms. Looking specifically at changes in analyst recommendations for publicly traded hospitality firms, the same patterns hold, with average one-day abnormal returns of 1.98 percent on analyst upgrades and -1.79 percent on analyst downgrades and similar “buy the rumor, sell the news” trading patterns by active institutional investors around analyst recommendation changes.

Information in Stock Prices:

Buy the Rumor, Sell the News?

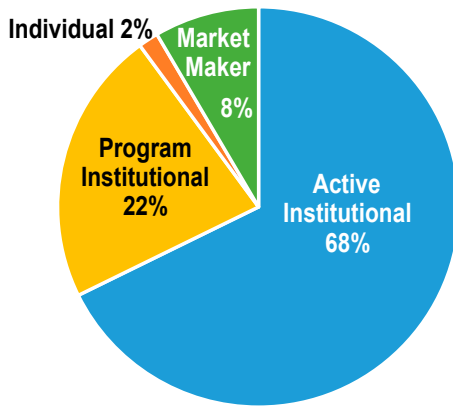
by Pamela C. Moulton

A popular adage suggests that smart traders “buy the rumor and sell the news.”¹ The term “rumor” in this phrase is interpreted broadly to include any information learned before a public announcement regarding a stock, including corporate financial reports or guidance and stock analyst upgrades or downgrades. In this study I examine a dramatic example of how active institutional investors use a “buy the rumor, sell the news” strategy to profit from changes in sell-side analysts’ stock recommendations, and I consider the implications of these findings for hospitality firms. For the study presented here, my colleagues, Ohad Kadan and Roni Michaely, and I analyzed the trading behavior of four types of investors around analyst recommendation changes.² The investor types are active institutional investors, program institutional investors, market makers, and individuals.

¹ The reverse is also true, to “sell the rumor and buy the news,” if the expectation is for stock prices to decline.

² See: Ohad Kadan, Roni Michaely, and Pamela C. Moulton, “Trading in the Presence of Short-Lived Private Information: Evidence from Analyst Recommendation Changes,” *Journal of Financial and Quantitative Analysis* (forthcoming).

Trading percentages by trader type



In this report we take advantage of a dataset that identifies trading activity by trader type to examine how their trading strategies infuse information into stock prices. We also examine how and when stock prices react to analyst recommendation changes. Our analysis reveals unexpected richness in how different investors' trading strategies move stock prices.

Sample and Data

We draw on three datasets to create our sample. First, we obtain analyst recommendation data from the Thomson Financial Institutional Brokers Estimate (I/B/E/S) database. An analyst upgrade occurs when an analyst changes her recommendation from sell to hold, hold to buy, or sell to buy; similarly, analyst downgrades are defined as changes from buy to hold, hold to sell, or buy to sell. Second, we obtain information on the buying and selling behavior of different types of traders from a proprietary dataset provided by the New York Stock Exchange (NYSE). We also collect descriptive data on stocks and overall market activity from the Center for Research in Securities Prices (CRSP) database. The intersection of these datasets produces a sample of 15,101 analyst upgrades and 15,907 analyst downgrades for 2,122 different NYSE-listed stocks between March 10, 1999, and April 22, 2010. The average firm in our sample has a market capitalization of about \$6.5 billion and is covered by seven analysts.

The four types of traders in our analysis execute vastly different trading volumes, as shown in Exhibit 1. Individual investors make up the smallest portion of trading activity, with only 2 percent of total trading volume. Market makers account for another 8 percent of total

trading volume, in keeping with their responsibility to help keep markets orderly and provide liquidity to other market participants.³ The remaining 90 percent of trading volume comes from institutional investors, both active institutions (such as actively managed funds) and institutional program traders. Per NYSE definition, program trades constitute baskets of at least 15 stocks valued at \$1 million or more. Institutions use program trades to efficiently execute simultaneous trades in multiple securities. A common reason for such trades is to track an index, and trades of this type are not usually driven by news about a specific stock.

Returns around Analyst Recommendation Changes

A chief question for this study is the extent to which changes in analysts' recommendations affect stock prices. Stock analysts generally are highly skilled at examining the companies they cover. Their recommendations are based on publicly available information, since companies are explicitly forbidden to provide private information to the analysts who cover them. This long-time restriction was made stronger in August 2000 by Regulation Fair Disclosure (Reg FD). The value of the analysts' recommendations comes from their expertise in interpreting and combining all the information available about a company.

One could argue that if analyst recommendations merely reflect what traders already know, those recommendations should not affect stock prices. But if analyst recommendation changes truly add valuable information to the investment process, stock prices should react to their release by increasing on analyst upgrades and falling on analyst downgrades. This is exactly what occurs, as shown in Exhibit 2, which summarizes the average abnormal return (after adjusting for market return) for the full sample of stocks and for hospitality stocks over the one-day, one-month, and six-month periods following analyst recommendation changes. For this purpose, hospitality stocks are broadly defined to include hotels, restaurants, travel, and gaming. Both upgrades and downgrades lead to large abnormal returns on the day analyst recommendation changes are publicly announced (see One-day Event Return). Over the subsequent one and six months, returns continue to rise after upgrades, while the returns on downgraded stocks do not decline much further after their first-day reaction. The returns for hospitality stocks are similar to those for the full sample (the differences between the two samples are not statistically significant).

³ Formerly called specialists, these firms are responsible for ensuring an orderly market for their assigned equities. They were renamed designated market makers in 2007.

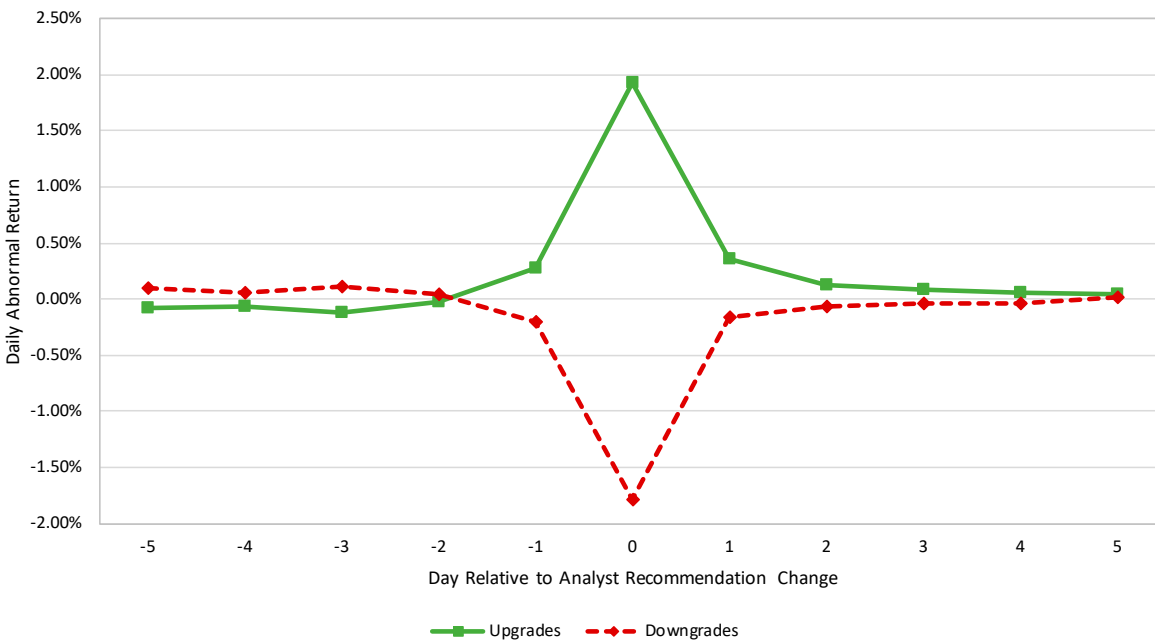
EXHIBIT 2

Gains and losses recorded around changes in analyst recommendations

		One-day Event Return	One-month Postevent Return	Six-month Postevent Return
Analyst Upgrades	All Stocks	1.96%	3.49%	6.84%
	Hospitality Stocks	1.98%	3.42%	6.71%
Analyst Downgrades	All Stocks	-1.83%	-2.05%	-1.91%
	Hospitality Stocks	-1.79%	-1.79%	-1.86%

EXHIBIT 3

Abnormal returns around analyst recommendation changes

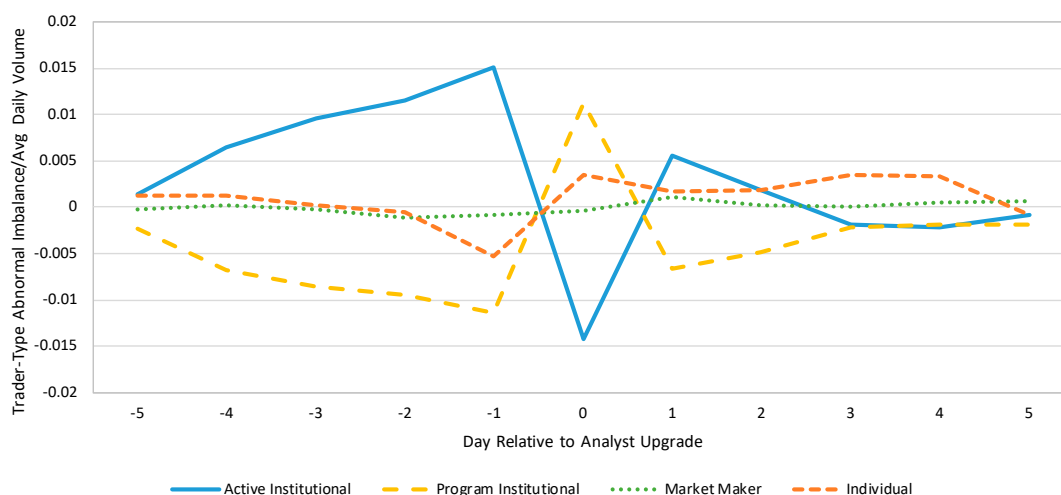


The timing of these trades is key, as shown in Exhibit 3. The stock returns in the days before the recommendation changes are not significantly different from zero. The returns on the day of upgrades and the following day are significantly positive, however, while the returns on the day of downgrades and the following day are significantly negative. These patterns suggest that trading around analyst recommendation changes can be profitable, but the profits depend on trading in a particularly timely manner.

Trading around Analyst Recommendation Changes

With analyst recommendation changes causing same-day returns of nearly 2 percent, we wanted to determine how the four trader types act on the news and when they do so. We construct daily measures of each trader type’s trade imbalance (dollar amount bought minus dollar amount sold), and we standardize the measures by dividing by the rolling average daily volume over the prior year. To

Abnormal trade imbalance around analyst upgrades



isolate the abnormal trade imbalance surrounding analyst recommendation changes, we then subtract the average daily trade imbalance (also scaled by average daily volume over the prior year) from days -45 to -11 and +11 to +45 relative to the recommendation change date. The resulting abnormal trade imbalance reflects the buying minus selling by a particular trader type relative to their normal activity levels. The results of these calculations are shown in Exhibit 4. The outcomes shown in the exhibit are bound by the constraint that the sum of all imbalances across the four trader types must be zero, since there are always an equal number of shares bought and sold in total.

All trade imbalances for the four trader types are flat until a few days before the upgrades. Just prior to the the release of the recommendation change (days -4 to -1), however, we see a notable increase in positive imbalance by active institutional traders purchasing shares. This reverses to a negative imbalance on the day the upgrade is announced, as the active traders unwind their purchases. This pattern is consistent with “buy the rumor, sell the news” behavior. By buying before the stock price goes up, and then selling on the day that the analyst recommendation change is announced and prices rise, active institutions lock in a profit. In contrast, the abnormal imbalances of individual investors remain roughly flat until the day the upgrade is announced, and then the imbalances rise, indicating that individuals buy on the day the upgrade is announced (buying the news), but they are only a tiny

factor. Market makers generally are not on the other side of the trade, as their imbalances are not sufficient to match the active traders (perhaps because the market is cleared by other traders). Instead, it is program institutional traders who emerge as the counterparties of the active institutions. The abnormal imbalance of program institutions forms nearly a mirror image to that of active institutional investors before and on the day of upgrades. The reason is not that program institutional traders are specifically selecting about-to-be-upgraded stocks to sell before upgrades and buy on upgrade days, but rather that when a recommendation-change stock is part of the basket of orders submitted by a program institutional trader, it is more likely to result in a trade because active institutions are eager to trade in the opposite direction. Downgrades follow the same pattern in reverse, as shown in Exhibit 5, except that the trading imbalances are smaller.

In Exhibit 6 we test the significance of these patterns by tallying the cumulative abnormal imbalance for each trader type in the four days prior to the recommendation change (Day -4 to -1), on the recommendation-change day (Day 0), and in the four days following the recommendation change (Day +1 to +4). A positive value corresponds to excess buying activity relative to the period, while a negative value indicates excess selling.⁴

⁴ Significance is determined using t-statistics based on standard errors that are double-clustered by stock and day, and significance is indicated by three stars for 1 percent, two stars for 5 percent, and one star for the 10 percent level.

EXHIBIT 5

Abnormal trade imbalance around analyst downgrades

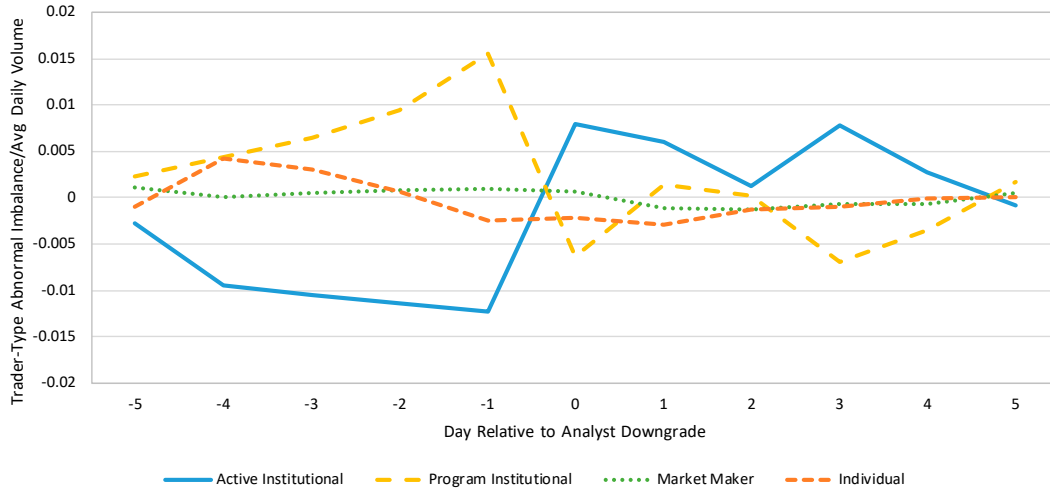


EXHIBIT 6

Abnormal buying and selling activity around analyst recommendation changes

Analyst Upgrades (Panel A)			
Trader Type	Day -4 to -1	Day 0	Day +1 to +4
Active Institutional	4.26***	-1.43***	0.33
Program Institutional	-3.62***	1.12***	-1.55**
Individual	-0.44	0.35*	1.03
Market Maker	-0.20*	-0.04	0.19
Analyst Downgrades (Panel B)			
Trader Type	Day -4 to -1	Day 0	Day +1 to +4
Active Institutional	-4.37***	0.80**	0.59
Program Institutional	3.58***	-0.64**	-0.08
Individual	0.54	-0.10	-0.53
Market Maker	0.24	-0.06	0.02

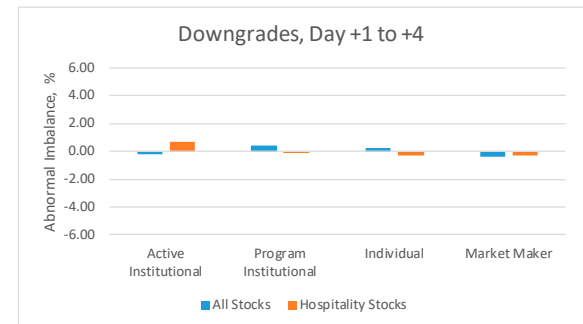
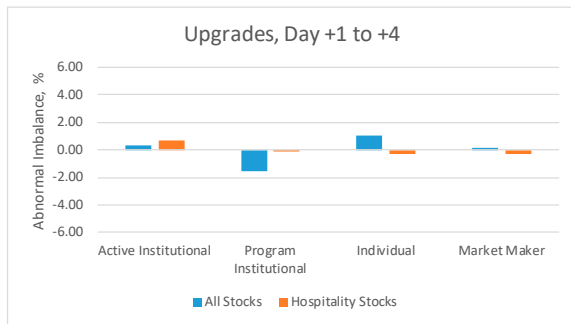
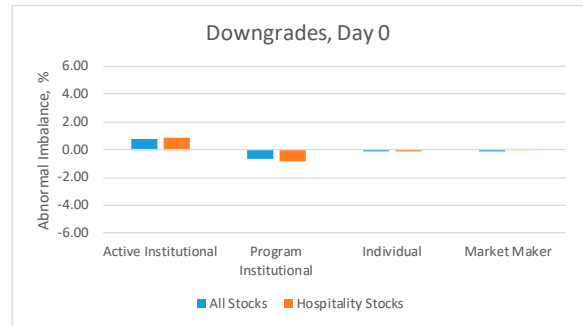
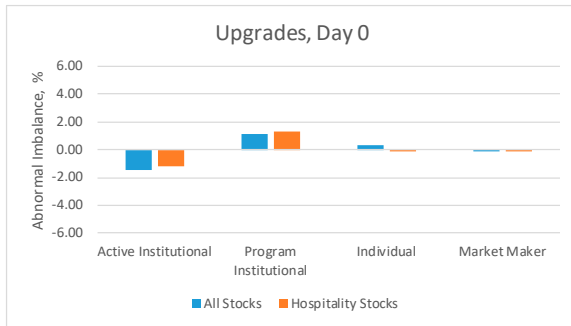
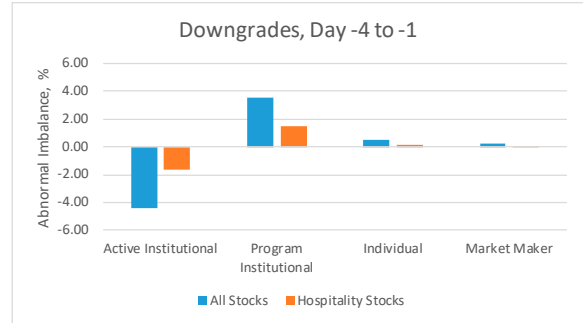
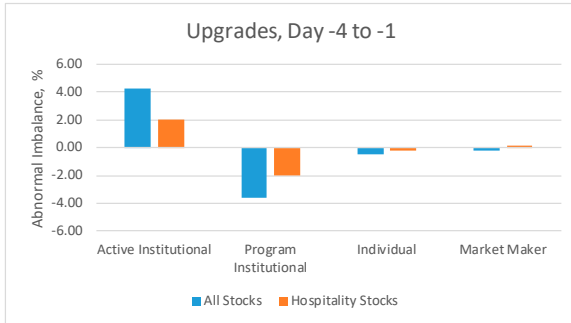
Note: Significance is indicated as follows: *** $p < .01$; ** $p < .05$; * $p < .10$.

As shown in Exhibit 6, Panel A, the results for active institutional trades show significant abnormal buying activity equal to 4.26 percent of average daily volume during the four days prior to an upgrade. On the day of the upgrade we observe abnormal selling activity by active institutions equal to 1.43 percent of average daily volume. Thus, active institutions appear to unload about a third of the amount they bought, taking profits immediately upon the informa-

tion release. Likewise, as shown in Panel B, active institutions also significantly sell before downgrades and buy on downgrade announcements. Program institutional traders take the lion's share of the opposite position to active institutions both before and on the days of analyst recommendation changes.

Individuals are generally not in a position to hear "rumors" and so do not trade in the direction of informa-

Abnormal hospitality equity trade imbalances around analyst upgrades and downgrades



tion prior to recommendation changes. They do, however, exhibit significant net buying on the day of upgrades (0.35%, significant at the 10% level), but they tend not to engage in short selling, so they are relatively inactive in connection with downgrades. Individual investors can respond to upgrades relatively easily by buying the recommended stocks, but can generally trade on downgrades only by selling the stock if they already own it (or less commonly through a short sale). Meanwhile market-maker imbalances are generally not significant, perhaps

because market makers have little need to step in when program institutional traders are providing liquidity.

Hospitality buying and selling. Although the percentage of hospitality-industry trades in our database is relatively small, we see the same pattern as in the full sample, as shown in Exhibit 7. About 6 percent of the recommendation changes in our sample period are for hospitality stocks. As with the full sample, for example, active institutions buy hospitality-related stocks before upgrades and sell on upgrade days, while program insti-

tutional traders trade in the opposite direction. Because of the small size of the hospitality stock subsample, hospitality stock estimates are noisy, so they are neither statistically significant nor are they significantly different from the all-stock averages.

The Source of Rumors

Let's look now at the source of the "rumors." That is, how do active institutional investors know to trade in the right direction prior to the public announcement of an analyst recommendation change? Since investors are not required to reveal why they trade, we cannot know for sure, but there are two likely explanations. One possibility is that active institutional investors receive information about stock recommendations from analysts a few days before the analysts' recommendations become public, a practice known as tipping. We know that trading on insider information is not legal, but analysts may distribute information regarding their upcoming recommendations to their paying clients, based on the expertise that the analysts have developed. Securities laws such as Reg FD bar selective disclosure by the companies themselves to analysts or investors, but securities lawyers distinguish this issue as follows: "No law prevents investors from trading on non-public information they have legally purchased from other private entities."⁵ In essence, the law recognizes that sell-side analysts are entitled to distribute their expert opinions to their own clients (who pay for their services) before releasing them to the public.

A second possibility is that active institutional investors do their own research and reach similar conclusions about stocks in the few days before sell-side analysts announce changes in their recommendations. Doing their own research may lead them to the same conclusion and inspire them to trade as if they had been tipped. Many active institutional investors employ their own equity analysts, known as buy-side analysts, whose research is available only to the portfolio managers in their own firm.

Interpretation and Implications for Hospitality Executives

Regardless of the reason for the pattern of active institutional trading identified here, this study is valuable for C-suite executives, who often are concerned with favorable stock performance. Hospitality executives who understand how information gets into prices and who it is that trades on sell-side analyst recommendations can better interpret their own stock's price movements. When Wall

⁵ See: Susanne Craig, "Goldman's Trading Tips Reward Its Biggest Clients," *Wall Street Journal*, August 24, 2009; and Brody Mullins, Michael Rothfeld, Tom McGinty, and Jenny Strassburg, "Traders Pay for an Early Peek at Key Data," *Wall Street Journal*, June 13, 2013.

Street analysts change their recommendations for a particular stock, managers can get a more complete picture of the impact on their stock price by looking at their stock price behavior not only on the day of the recommendation change but also in the days immediately before (when informed institutional investors were likely already trading on the rumor) and in the days subsequent to the actual announcement, as some investors take profits (dampening the announcement-day price change) while other investors build positions more slowly.

This study also provides insight into how active portfolio managers can add value. Such insight is valuable for hospitality firms (and other employers) that provide retirement plans for their employees.⁶ A long-running debate is whether active portfolio managers add value to defined benefit or defined contribution plans, or whether retirement plan investors are better served by purely passive investment funds such as index funds. This study sheds new light on the debate by showing that in situations where there is new information to process, active portfolio managers can outperform their indexing peers by anticipating the news and trading before it is fully reflected in stock prices. In such situations, while active managers profit from "buying the rumor and selling the news," program traders such as index funds are likely to find themselves inadvertently following the losing strategy of "selling the rumor and buying the news." Many academic studies (including some of my prior work) have suggested that active portfolio managers may destroy value by trading too often.⁷ This study shows that active managers can also add value by trading on research (their own or that provided by sell-side analysts), which suggests that including some actively managed funds can make sense for retirement plans at hospitality firms.

As in all studies based on historical data, the findings in this study are subject to the limitation that the future may not replicate the past. In particular, if sell-side analysts stop tipping their clients before releasing their stock recommendations or active portfolio managers stop doing their own research to predict stock recommendation changes, these patterns may not hold in the future. As a final point, I note that the sample period included the financial crisis of 2008-09. However, the finding of superior trading by active institutions occurs in every year, including during the financial crisis. ■

⁶ The five largest hotel companies in the U.S. have over \$10 billion in assets under management in their retirement plans—making them a key link in retirement investment decisions.

⁷ See: Pamela Moulton, "Short-term Trading in Long-Term Funds: Implications for Financial Managers," *Cornell Hospitality Report*, Vol. 16, No. 23 (2016); Cornell Center for Hospitality Research.

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